PsychCentral®

Search term or ZIP code

Home Conditions Quizzes Menu: Where to?

News & Experts Research & Resources

Find Help Pro

Google Web Hosting

Build Your Online Presence With Google Sites. Free 30-Day Trial!

The Brain

What is Functional Magentic Resonance Imaging?
Brain Imaging: A Technological Breakthough in the Assessment of Pain
Types of Brain Imaging Techniques
Researchers Explain How We Learn by Observation
What is Functional Near-Infrared Spectroscopy?
Treatment of Depression With rTMS
Unraveling the Biology of Emotions
Areas of Research into Alzheimer's Disease

Recent News

Types of Brain Imaging Techniques

By Michael Demitri, M.D.
~ 2 min read

Brain imaging techniques allow doctors and researchers to view activity or problems within the human brain, without invasive neurosurgery. There are a number of accepted, safe imaging techniques in use today in research facilities and hospitals throughout the world.

fMRI

Functional magnetic resonance imaging, or fMRI, is a technique for measuring brain activity. It works by detecting the changes in blood oxygenation and flow that occur in response to neural activity – when a brain area is more active it consumes more oxygen and to meet this increased demand blood flow increases to the active area. fMRI can be used to produce activation maps showing which parts of the brain are involved in a particular mental process.

CT

Computed tomography (CT) scanning builds up a picture of the brain

SHOUT
SHARE
IT

Imagination Tied to Memory
Daytime Nap Can Help Memory
Brain Scans Study ESP
Serotonin Tied to Optimism and Depression

- Emotional Complexity is a Good Trait
- Brain Imaging Identifies Children at Risk for Depression Later in Life
- Paternal Depression During Pregnancy Increases Risk for Very Preterm Birth

What's Hot

- Want to Be Close to Someone? Ask These 36 Questions
- 4 Jedi Mind(fulness) Tricks to Help an Anxious Child
- How to screw up taking antidepressants

based on the differential absorption of X-rays. During a CT scan the subject lies on a table that slides in and out of a hollow, cylindrical apparatus. An x-ray source rides on a ring around the inside of the tube, with its beam aimed at the subjects head. After passing through the head, the beam is sampled by one of the many detectors that line the machine's circumference. Images made using x-rays depend on the absorption of the beam by the tissue it passes through. Bone and hard tissue absorb x-rays well, air and water absorb very little and soft tissue is somewhere in between. Thus, CT scans reveal the gross features of the brain but do not resolve its structure well.

PET

Positron Emission Tomography (PET) uses trace amounts of short-lived radioactive material to map functional processes in the brain. When the material undergoes radioactive decay a positron is emitted, which can be picked up be the detector. Areas of high radioactivity are associated with brain activity.

EEG

Electroencephalography (EEG) is the measurement of the electrical activity of the brain by recording from electrodes placed on the scalp. The resulting traces are known as an electroencephalogram (EEG) and represent an electrical signal from a large number of neurons.

EEGs are frequently used in experimentation because the process is non-invasive to the research subject. The EEG is capable of detecting changes in electrical activity in the brain on a millisecond-level. It is one of the few techniques available that has such high temporal resolution.

MEG

Magnetoencephalography (MEG) is an imaging technique used to measure the magnetic fields produced by electrical activity in the brain via extremely sensitive devices known as SQUIDs. These measurements are commonly used in both research and clinical settings. There are many uses for the MEG, including assisting surgeons in localizing a pathology, assisting researchers in determining the function of various parts of the brain, neurofeedback, and others.

NIRS

Near infrared spectroscopy is an optical technique for measuring blood oxygenation in the brain. It works by shining light in the near infrared part of the spectrum (700-900nm) through the skull and detecting how much the remerging light is attenuated. How much the light is attenuated depends on blood oxygenation and thus NIRS can provide an indirect measure of brain activity.

9 100

You May Also Like

Sponsored by Revcontent

The 12 Most Expensive Flights In The World

6 Secret Signs of Hidden Depression

Top 10 best looking actors over 50

The Six Hallmarks of a Sociopath

6 Tips For Creating The Most Killer Viral Gallery Content

Study: Cigarette Smoking May Make You Psychotic

Most Popular News

- Hyperactive Brain May Influence Schizophrenia
- How Drugs Hijack Decision-Making in The Brain
- Genetic Influence On Behavior
- Aggressive Behavior Tied To Smaller Emotional Brain Regions
- Mindfulness Reduces the Way Stress Affects the Brain

Join Over 175,000 Subscribers
to Our Weekly Newsletter

email address

Subscribe

Related Topics

- *Read more articles by this author*
- No Related Post

APA Reference

Demitri, M. (2013). Types of Brain Imaging Techniques. *Psych Central*. Retrieved on January 23, 2016, from http://psychcentral.com/lib/types-of-brain-imaging-techniques/

Scientifically Reviewed

Last reviewed: By John M. Grohol, Psy.D. on 30 Jan 2013
Originally published on PsychCentral.com on 14 Jun 2007. All rights reserved.

« What is Functional Magnetic Resonance Imaging (fMRI)?
Why Are You Overeating? »

Find a Therapist
Enter ZIP or postal code
ZIP Code Go

A New Nerve Center for Neurology
Alzheimer disease. Headache and migraine. Multiple sclerosis. AND MORE
NeurologyTimes.com

Home

About Us
Ad Choices
Advertise with Us
Contact Us
Privacy Policy
Terms of Use
Site Map
Disclaimer/Disclosure
Feeds
ADHD
Anxiety
Bipolar
Depression
Schizophrenia
Psychotherapy
Psych Central **Professional**
Psych Central Blog Network
Psych Central News
Psychological Tests & Quizzes
Sanity Score
Forums • NeuroTalk
Copyright © 1995-2016 Psych Central
Site last updated: 23 Jan 2016
Handcrafted with pride in historic Massachusetts.

Psych Central does not provide medical, mental illness, or psychological advice, diagnosis or treatment. Learn more.

Like 184k Follow @psychcentral 114K followers

Recommended for you

Attention Deficit Disorder: Support Gro...
psychcentral.com

Classical Texts in Psychology -- Baldwin...
psychcentral.com

Short Personality Quiz Results - Psych Central
psychcentral.com

AddThis